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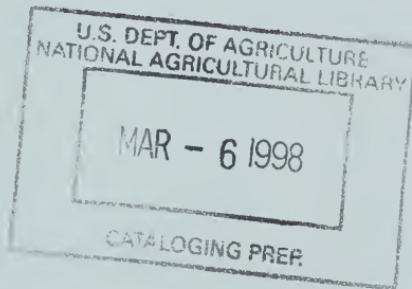
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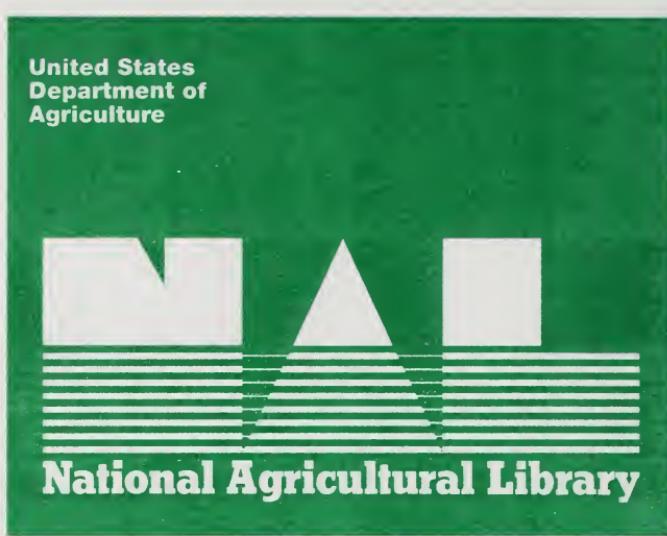
Safety- Operations Plans

A Self-Evaluation Checklist for Operators of Grain Elevators



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INTRODUCTION

The broad term "safety-operations plans" includes five specific program areas, all of which must be addressed if grain handling facilities are to achieve and maintain safe and healthful working conditions. These are safety, emergency preparedness, housekeeping, maintenance, and security. Attention and effort must be directed to a functional and continuing plan of action in each of these areas. Failing to achieve an adequate level of performance in any one of the areas can result in accidents which, at the very least, disrupt the ability to achieve management and operating goals.

Many grain-handling accidents, from a cut finger to a catastrophic dust explosion, result from simple mistakes—either mistakes in performing ordinary tasks or mistakes in judgment. Preventing mistakes reduces the likelihood of accidents and results in a facility which functions smoothly and safely.

Preventing accidents by preventing mistakes is not an achievement obtained without some cost. It involves such varied factors as management-employee attitudes and relationships, facility design, types of grain or products handled, and age of equipment. The chief requirement is attention to detail. This means knowing what to do and how and when to do it. This takes forethought and planning . . . a concise set of standard operating procedures for each of the five program areas already mentioned.

Having a set of standard operating procedures in a particular program, maintenance for instance, normally requires some sort of written instructions. However, a system of oral instructions can be adequate, and even desirable, under certain circumstances. Depending on the situation in a particular facility, this will vary. How extensive a program should be and how rigorously it is implemented also will vary depending on the facility. Ultimately, these are management decisions.

The following checklists are guides for managers of grain-handling facilities to use in assessing the adequacy of safety-oriented efforts in their individual facilities. This material is designed to help managers develop and implement adequate, effective work programs geared to safe and efficient grain handling. In general, the greater the number of questions having a check in the "no" column, the greater the need to improve existing procedures and instructions in order to achieve currently accepted standards of safe, effective operations. As stated previously, what parts and how much of this guide should be put into practice are management decisions depending on the situation in an individual facility.

SAFETY PROGRAM

A safety program is a means of preventing accidents, including fires and explosions. It is also one means of dealing with and resolving known safety hazards and problems which arise from time to time. Good safety programming must recognize the valuable contribution of employees in achieving and maintaining safe and healthful working conditions. In this respect, training and the dissemination of information are vitally important.

	YES	NO
1. Has the facility developed and implemented a safety program?.....	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the objectives of the program clearly stated in a written plan?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is some person in the facility responsible for seeing that the safety program is implemented?	<input type="checkbox"/>	<input type="checkbox"/>
4. Does the facility have a functioning safety committee?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does membership of this committee include all employees?.....	<input type="checkbox"/>	<input type="checkbox"/>
6. Do all employees attend committee meetings?.....	<input type="checkbox"/>	<input type="checkbox"/>
7. Do outside contractors attend and participate in these meetings?	<input type="checkbox"/>	<input type="checkbox"/>
8. Are all employees and contractors notified of committee decisions and recommendations?.....	<input type="checkbox"/>	<input type="checkbox"/>

YES NO

9. Does the committee meet:
(Check "yes" to one only)
- Biweekly?
- Monthly?
- Bimonthly?
- Other (specify) _____
10. Are regular plant safety inspections performed by the safety committee?
11. Does management accompany the committee on these inspections?
12. Are there correction and followup procedures for hazardous conditions noted on these inspections?
13. Are new employees briefed or orally instructed in safety and what they must do to maintain a safe facility?
14. Is a safety handbook or checklist issued to new employees?
15. Are employee work activities periodically analyzed to ensure that jobs are being performed as safely as possible?
16. Are employees periodically instructed in work techniques which help to promote safety?
17. Are outside contractors and their employees briefed and given copies of safety instructions?
18. Does facility management check to make sure that contractors and their employees are following these safety instructions?

YES NO

19. Do safety briefings for new employees and contractors cover:

Proper clothing?

Use of safety devices?

Safe work procedures (do's and don'ts)?

Procedures requiring permits or special permission?

Other (specify) _____

20. Are there permit requirements and procedures for:

Welding and hot work?

Equipment lockout?

Bin or tank entry?

Choked legs?

Fumigation?

Vessel or rail car entry?

Other (specify) _____

21. Are employees provided with personal safety equipment?

22. Are employees instructed in maintenance and use of this equipment?

23. Is a location chart for gas masks readily available for all personnel?

24. Are gas masks located on each floor of the elevator?

25. Is a location chart for self-contained breathing devices available to all personnel?

26. Are dust masks readily available?

YES NO

27. Is use of personal safety equipment strictly enforced?
28. Are employees given first aid training?
29. Is there at least one person with first aid training on each shift?
30. Is the location of all first aid kits known to all personnel?
31. Are first aid kits located on each floor of the facility and in all major areas?
32. Does the facility have an accident reporting system?
33. Are serious accidents investigated?
34. Does the facility have a procedure for collecting and evaluating employee suggestions about how to improve safety?
35. Are incentives offered for suggestions which are used?
36. Are there procedures for putting acceptable suggestions into practice?
37. Are employees trained to recognize and react to hazard situations?
38. Are primary emergency exits clearly marked?
39. Are alternative exits clearly marked and known to all personnel?
40. Are employees fully aware of possible fire and explosion hazards in elevators?

NOTES

EMERGENCY PREPAREDNESS PROGRAM

Developing and carrying out various emergency procedures if an accident should occur is good common sense. No one can anticipate and prevent every accident. An effective emergency preparedness program will permit the facility to save lives, reduce injuries, and minimize property losses when emergencies occur.

YES NO

1. Has the facility developed and implemented a written emergency preparedness program?
2. Does the program specify responsibilities in emergency situations for:
Designated management officials?
Supervisors?
Employees?
3. Has a responsible person been assigned to ensure that emergency provisions can be carried out?
4. Is a responsible official on duty at the facility at all times during operations?
5. Does this person have the necessary authority to halt operations and initiate emergency procedures?
6. Does this authority include employee and contractor evacuation?
7. Are there specific emergency instructions and procedures for:
Fires?
Dust explosions?
Bomb threats?
Tornadoes and hurricanes?
Release of toxic chemicals?
Equipment or electrical malfunction?

	YES	NO
Personal injury or sickness?	<input type="checkbox"/>	<input type="checkbox"/>
Civil disorders?	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify) _____		
8. Are there regular drills and training in each emergency procedure?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are there instructions which specify procedures for equipment shutdown in an emergency?	<input type="checkbox"/>	<input type="checkbox"/>
10. Do all persons in the facility know the locations of primary and alternative exits in all major areas? ...	<input type="checkbox"/>	<input type="checkbox"/>
11. Can areas of the facility be isolated to contain emergency situations?.....	<input type="checkbox"/>	<input type="checkbox"/>
12. Is the facility equipped with alarms, intercoms, telephones, and the like to notify persons in the facility that an emergency exists?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are there backup communication systems?	<input type="checkbox"/>	<input type="checkbox"/>
With separate power supplies?.....	<input type="checkbox"/>	<input type="checkbox"/>
14. When persons are evacuated from the facility, have safe areas been designated?	<input type="checkbox"/>	<input type="checkbox"/>
15. Is there some means of determining that all persons are out of the facility (that is, buddy system, head count, and so forth)?	<input type="checkbox"/>	<input type="checkbox"/>
16. Does the program specify exactly who determines when an emergency has been abated and operations can resume?	<input type="checkbox"/>	<input type="checkbox"/>
17. Does the program provide for prompt notification of appropriate Federal, State, and local authorities?	<input type="checkbox"/>	<input type="checkbox"/>

YES NO

18. Does notification of authorities include:
- Police or sheriff?
- Fire department?
- Civil defense?
- Hospitals?
- Port authorities?
- Coast Guard officials?
- Occupational Safety and Health Administration? ..
- U.S. Department of Agriculture?
- Food and Drug Administration?
- Insurance companies?
- Ship captains?
- Other (specify) _____
19. Has it been clearly defined exactly which authority has overall responsibility for directing and co-ordinating emergency procedures?
20. Have the appropriate authorities helped to develop emergency procedures?
21. Does the program specify a company official who is responsible for coordinating development and implementation of the emergency preparedness program with appropriate Federal, State, and local authorities? (See No. 18.)
22. Does the program specify exactly what emergency equipment and resources are available:
- Inhouse?
- Outside?
23. Are equipment and resources adequate?

24. Are location charts for emergency equipment available to all personnel:

- | | | |
|--|--------------------------|--------------------------|
| Fire extinguishers? | <input type="checkbox"/> | <input type="checkbox"/> |
| Alarm boxes? | <input type="checkbox"/> | <input type="checkbox"/> |
| Gas masks? | <input type="checkbox"/> | <input type="checkbox"/> |
| Self-contained devices/dust masks? | <input type="checkbox"/> | <input type="checkbox"/> |
| Fire hoses? | <input type="checkbox"/> | <input type="checkbox"/> |
| First aid kits? | <input type="checkbox"/> | <input type="checkbox"/> |
| Sprinkler systems? | <input type="checkbox"/> | <input type="checkbox"/> |

25. Is this equipment readily accessible to all work locations?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

26. Are employees trained to use this equipment?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

27. Are appropriate types of fire extinguishers placed at or near hazardous locations?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

28. Are fire extinguishers marked to show the types of fires for which they should be used?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

29. Are extinguisher locations designated by signs or other markings if located in an area of visual obstruction?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

30. Do sprinkler controls have a sign showing how they are to be used?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

31. Has a functional, dry standpipe been installed in the facility?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

32. Are hose and pumper couplings clearly marked? ..

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

33. Are all alarm boxes located in the normal path of exit travel?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

34. Are alarm boxes readily visible and well marked? ..

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

YES NO

35. Does the facility have a fire brigade?

36. If so, is the brigade trained?

NOTES

HOUSEKEEPING PROGRAM

Housekeeping activities should be scheduled and carried out so as to prevent the accumulation of potentially dangerous materials such as grain spills, dust, oily wastes, rubbish, and other debris or unused equipment and material. An effective housekeeping program can achieve not only reduced amounts of fuel available for fires and explosions but also a reduction of slip/fall hazards, reduced insect and rodent infestation and damage, and improved employee morale because of generally improved working conditions.

In those facilities where pneumatic dust control systems are installed and operated, the need for housekeeping may be reduced. However, it can not be entirely eliminated. Housekeeping should be performed regularly, based on regular evaluation of individual areas within the facility. The need for housekeeping, both "how often" and "how much," will vary with each area. Housekeeping programs should provide for safe and rapid disposal of collected material.

YES NO

1. Has the facility developed and implemented a written housekeeping program?
2. Does the program include inspection checklists/schedules?
3. Does the program specify housekeeping responsibilities for:
Designated management official(s)?
Individual employees and shifts?
Major areas within the facility?
4. Are housekeeping standards clearly specified?
5. Are these standards defined in terms of:
Accumulated dust levels?
Airborne dust concentrations (operational level of dust control systems)?

	YES	NO
Spill levels?	<input type="checkbox"/>	<input type="checkbox"/>
Dust system malfunction or shutdown?	<input type="checkbox"/>	<input type="checkbox"/>
Accumulations of debris or trash?	<input type="checkbox"/>	<input type="checkbox"/>
General cleanup?	<input type="checkbox"/>	<input type="checkbox"/>
Other (oil/water spills, and so on)?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are these standards enforced by using:		
Inspections?	<input type="checkbox"/>	<input type="checkbox"/>
Followup inspections?	<input type="checkbox"/>	<input type="checkbox"/>
Other supervision methods?	<input type="checkbox"/>	<input type="checkbox"/>
7. Are there specific instructions on when where, and how to perform:		
Vacuuming?	<input type="checkbox"/>	<input type="checkbox"/>
Compressed air blowdown?	<input type="checkbox"/>	<input type="checkbox"/>
Washdowns?	<input type="checkbox"/>	<input type="checkbox"/>
Manual cleaning?	<input type="checkbox"/>	<input type="checkbox"/>
(Sweeping and shoveling)		
8. Can the plant be shut down (or a specific area isolated) for housekeeping when necessary?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is plant shut down (or area isolation) for housekeeping done periodically?	<input type="checkbox"/>	<input type="checkbox"/>
10. How frequently: (Check "yes" to one only)		
Monthly?	<input type="checkbox"/>	<input type="checkbox"/>
Quarterly?	<input type="checkbox"/>	<input type="checkbox"/>
Biyearly?	<input type="checkbox"/>	<input type="checkbox"/>
Yearly?	<input type="checkbox"/>	<input type="checkbox"/>
As needed?	<input type="checkbox"/>	<input type="checkbox"/>
Never?	<input type="checkbox"/>	<input type="checkbox"/>

YES NO

11. Does the program specify or address operational levels of pneumatic dust control systems as part of the general housekeeping program? (See also "Maintenance Program, Dust Control.")
12. Are all dust systems now operating effectively?
13. What type:
- Fabric filter?
- Cyclone?
- Combined?
- Other (specify) _____
14. Has dust system operation significantly reduced housekeeping needs in applicable area?
15. Are dust control systems equipped with fire/explosion suppression or extinguishing devices, explosion dampers, or explosion vents?
16. Is dust-producing equipment interlocked with dust control systems so as to prevent operation when the dust system has malfunctioned or is inoperative? ..
17. Is collected dust removed from the stock handling stream?
18. If all or part of collected dust is not returned to stream, is it stored outside of the facility?

NOTES

MAINTENANCE PROGRAM

A rigorous preventive maintenance program is the cornerstone of a smoothly functioning grain elevator. It can also help to prevent accidents. Over the years many fires and explosions have been attributed to equipment malfunction. Most of these might have been prevented by effective maintenance.

Bulk grain handling requires many pieces of equipment. Each piece has to operate as part of a system. In terms of all of these separate pieces of equipment, even a small elevator can be fairly complex. This complexity requires a meticulous attention to detail if the entire system is to operate as intended. Attention to detail is especially critical in a maintenance program. For this reason, a written maintenance program is strongly recommended. Complete equipment files and records of maintenance activities are virtually indispensable. They play an important part in many management decisions and help to promote a safer, more efficient operation.

Although this section of the self-evaluation checklist is in some instances fairly detailed, covering most of the major pieces of equipment likely to be found in a grain elevator, it will require specific tailoring for an individual facility. While many of the major "problem" maintenance areas are addressed, the list will hardly be complete for all users. Therefore, the facility manager is urged to use these guidelines in developing a maintenance program based on the particular needs of his facility.

General

YES NO

1. Is there a written maintenance program now in use?
2. Does the program provide for:
Preventive maintenance?
Operational maintenance and replacement?
Emergency maintenance?

YES NO

3. Does the program specify exactly who is responsible for:

Maintenance activities?
General management?
Scheduling and inspection during each shift?
Performance?

4. Are there extra incentives for performing thorough and effective maintenance?

Records

5. Is there a listing of all mechanical and electrical equipment (both spare and in use)?

6. Are up-to-date maintenance files maintained on each piece of equipment?

7. Does each equipment maintenance file include:

Equipment drawings?

Lists of parts?

Maintenance, lubrication, and operating instructions and schedules?

Service, repair, and replacement records?

A record of how long the equipment has been in operation?

A record of the hours of maintenance work performed?

8. Are these files reviewed regularly?

Performance

9. Are employees trained to recognize malfunctioning equipment?

YES NO

10. Are there reporting procedures for equipment which is not operating properly (for example, work orders)?
11. Are employees trained in the use of these reporting procedures?
12. Following notification, is necessary maintenance always performed within: (Check "yes" to one only.)
- One hour?
- Four hours?
- Sometime during same shift?
- Next shift?
- None of the above (only when someone is available, which varies)?
13. Is there always followup by a responsible program official after maintenance requests are received to ensure that the work has been completed properly?
14. Is equipment inspected regularly and according to schedule?

Bucket Elevators

Pulleys and Bearings

15. Are bearings periodically monitored and checked for excessive heat and unusual noises?
16. Are bearings regularly cleaned and lubricated? ...
17. Are all bearing mount and cover bolts checked for tightness?
18. Is shaft movement in the bearing checked?

	YES	NO
19. Are bearing locking devices checked?	<input type="checkbox"/>	<input type="checkbox"/>
20. Are pulleys checked for tightness on shafts?	<input type="checkbox"/>	<input type="checkbox"/>
21. Is the head pulley shaft checked to ensure that it is level?	<input type="checkbox"/>	<input type="checkbox"/>
22. Are head pulleys (on the up-leg) plumb with tail pulleys and guide pulleys?	<input type="checkbox"/>	<input type="checkbox"/>
23. Are head pulleys (on the down-leg) plumb with the bent pulley?	<input type="checkbox"/>	<input type="checkbox"/>
24. Is head pulley lagging checked for wear, tightness, and cracks?	<input type="checkbox"/>	<input type="checkbox"/>
25. Are the ends of pulleys checked for cracks or other signs of stress or fatigue?	<input type="checkbox"/>	<input type="checkbox"/>
26. Are pulleys checked to ensure that pulley crown is centered and adequate for proper belt tracking? ..	<input type="checkbox"/>	<input type="checkbox"/>

Leg Belts and Buckets

27. Are leg belts checked for stretch, damage, and wear on both front and back of belt?	<input type="checkbox"/>	<input type="checkbox"/>
28. Are belts tracking properly on pulleys?	<input type="checkbox"/>	<input type="checkbox"/>
29. Are belt splices checked to ensure that they are in good condition (splice holes not stretched, elongated, or torn, bolts and fasteners tight, no cracks, and so on)?	<input type="checkbox"/>	<input type="checkbox"/>
30. Are edges of belts checked for wear?	<input type="checkbox"/>	<input type="checkbox"/>
31. Are buckets inspected to ensure repair or replacement of bent or missing buckets?	<input type="checkbox"/>	<input type="checkbox"/>
32. Are all buckets securely fastened to belts?	<input type="checkbox"/>	<input type="checkbox"/>

YES NO

33. Are belts and buckets checked under different conditions (high and low speed, full and partial load, and so forth) to ensure that they are not rubbing or banging against the leg casing?
34. Are belt takeup and tensioning devices checked to ensure that they are operating properly?
35. Are takeup devices regularly monitored to ensure that adequate slack side tension is maintained and always yields acceptable belt tracking and centering on the tail pulley?
36. Are gravity takeup devices monitored to ensure that they prevent the boot pulley from tipping to one side under loaded conditions?

Leg Motors and Drives

37. Is the operation of the motor checked regularly? ..
38. Are mounting bolts for the motor and speed reducer checked periodically for tightness?
39. Are leg drive assemblies checked for proper alignment, vibration, and excessive heat during operation?
40. Are chain drive oil baths maintained at the proper level?
41. Are oil levels on reducers checked periodically? ..
42. Are all seals checked periodically for deterioration and leaks?
43. Are drive parts lubricated regularly and is oil changed according to schedule?
44. Are backstops on the high speed gear shaft checked periodically to ensure that they prevent the leg from running backwards when loaded? ...

YES NO

45. If jacking motors are used, are these checked and maintained regularly?

Leg Casings

46. Are leg casings periodically checked for leaks, bent covers, and obstructions?
47. Is casing alignment checked to ensure that it has not shifted from a vertical position?
48. Are casings checked to ensure that buckets have adequate clearance?
49. Are leg boots periodically inspected and cleaned? .
50. Are access and inspection doors checked to make sure that they are tightly in place during leg operation?

Leg Feed and Discharge Spouts

51. Is spouting checked periodically for leaks?
52. Are spout linings checked for wear?
53. Are choke feeds, valves, and gates checked periodically to ensure that they are operating properly?
54. Are leg head bucket wipers checked periodically? .
55. Are legs checked while operating to ensure that down-legging of grain is minimized?

Leg Control and Safety Equipment

56. Are interlocks, lockouts, speed controls, and start and stop controls checked regularly to ensure that they are functioning properly?

YES NO

57. Are belt slowdown and motion sensors, alignment limit switches, or ammeters checked regularly to ensure that they are operating properly?
58. If bearing heat sensors are used, are these inspected regularly?
59. Are explosion relief vents and panels inspected periodically to ensure that they will function as intended?
60. Are heat sensors or other alarm systems in the leg head inspected regularly?
61. Are explosion suppression and fire extinguishing systems checked regularly?
62. Is leg bonding and grounding checked for electrical continuity?

Other

63. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
64. Are records reviewed periodically to identify problem areas?

Belt Conveyors

Bearings and Pulleys

65. Are bearings checked periodically for excessive heat and unusual noise during operation?
66. Are all bearing mounting bolts securely fastened?
67. Are bearings checked for excessive shaft movement in the bearing?

YES NO

68. Are all bearing alignment and locking devices inspected and tightened if necessary?
69. Are all bearings lubricated according to schedule?
70. Are all pulleys checked for tightness on their shafts?
71. Is head-pulley lagging checked for wear, cracks, and tightness?
72. Are ends of pulleys inspected for cracks or other signs of stress or fatigue?
73. Are takeup pulleys and belt tensioning devices functional?
74. Are pulleys checked for vertical (level) and lateral alignment?

Troughing and Return Rolls

75. Are troughing and return rolls checked for even wear?
76. Are they checked for excessive wear and ease of movement?
77. Are roller stands checked to ensure that they are square with the centerline of the conveyor belt and assembly?
78. Are rollers and roller stands securely fastened? ...
79. Are rollers lubricated according to schedule?
80. If automatic lubrication is used, are all lines and connections checked for leaks?
81. Are roller stands checked for grooves worn by rubbing, misaligned belts?

Belt ing

YES NO

82. Are belts aligned and tracking properly on pulleys and rollers?
83. Are belts inspected for stretching, tears, and excessive wear?
84. Are belt splices checked for tears, cracks, and tightness?
85. Under operating conditions, is the belt maintained at the proper tension?
86. Are belt wipers functioning properly?
87. Is skirting on belt loaders securely fastened and functioning as intended?

Belt Motors and Drives

88. Are belt motors checked regularly to ensure that they are operating properly?
89. Are drive and motor assemblies checked during operating conditions for alignment, vibration, wear, and excessive heat?
90. Are mounting bolts securely fastened?
91. Are oil levels on reducers checked periodically? ..
92. Are drive parts lubricated regularly and oil changed according to schedule?
93. Are seals inspected for leaks?
94. Are all couplings checked for tightness on their shafts?
95. Are keys and keyways checked for tightness and wear?

Control and Safety Equipment

YES NO

96. Are interlocks, lockouts, speed controls, and start and stop controls checked regularly to ensure that they are functioning properly?
97. Are ammeters or motion sensors checked regularly?
98. If bearing heat sensors are used, are these inspected regularly?

Other

99. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
100. Are records reviewed periodically to identify problem areas?

Screw Conveyors

Bearings

101. Are bearings checked regularly for unusual noises, wear, and heating?
102. Are bearings checked for tightness on shaft?
103. Are thrust, hanger, and front bearings inspected and lubricated regularly?

Screw Motor and Drive Assemblies

104. Are motor and reducer mounting bolts tight?
105. Are seals checked periodically for leaks?
106. Are motor bearings checked and lubricated regularly?

YES NO

107. Are reducer oil levels checked and oil changed according to schedule?
108. If chain drives are used, are these checked regularly for tension, wear, proper lubrication, and alignment?
109. Are drive assemblies checked regularly for excessive shaft movement and unusual noises?

Screws, Troughs, and Spouting

110. Is the screw properly aligned in the trough?
111. Is the inside of the trough checked for evidence of rubbing and excessive wear?
112. Are all screw shafts and couplings in good condition?
113. Are spouts and troughs tight and free from leaks?

Control and Safety Equipment

114. Are interlocks, lockouts, speed controls, and start and stop controls checked regularly to ensure that they are functioning properly?
115. Are starters checked and cleaned regularly?
116. Are bonding and grounding connections checked for electrical continuity?
117. Are other electrical contacts and conduit checked periodically?

Other

118. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)

YES NO

119. Are records reviewed periodically to identify problem areas?

Continuous Flow Dryers

Motors and Drive Components

120. Are motors checked regularly during operation? ..
121. Are bearings and belts inspected frequently for unusual noises, excessive wear and play on shafts, and alignment?
122. Are bearings lubricated according to schedule? ...
123. Are blowers inspected periodically:
Hot air blower?
Cold air blower?
Combustion air blower?
124. Are all fan blades inspected regularly?
125. Are reducers checked frequently and operated with proper lubrication levels?
126. Are variable speed drives inspected regularly?
127. Are all mounting bolts tight?
128. Are discharge coveyors operating properly?

Burners and Fuel Connections

129. Are burners inspected and cleaned regularly?
130. Are fuel lines inspected regularly for leaks and damage or corrosion?

Miscellaneous

YES NO

131. Are dryers inspected both inside and out for cleanliness and material buildup?
132. Are all access and inspection doors inspected regularly for tightness and leaks?
133. Are column screens inspected regularly for holes and tears?
134. Are air filters inspected and serviced regularly? ...

Dryer Control and Safety Equipment

135. Are interlocks, lockouts, speed controls, and start and stop controls checked frequently to ensure that they are functioning properly?
136. Are switches inspected frequently:
- Main thermostat?
- High-heat limit switch?
- Exhaust limit switch?
- High and low pressure switches?
- High and low gas pressure switches?
- Low oil temperature switches?
- Static pressure switch?
137. Are smoke detectors, product temperature detectors, and flame detectors inspected frequently? ...
138. Are fire-extinguishing or flame-suppression systems checked to ensure that they are functioning properly?

YES NO

139. Are dryer ignition systems in good working order:

- Spark plug?
 Purge timer?
 Transformer?

140. Are all electrical connections and conduits inspected frequently?

141. Are bonding and grounding connections tested for electrical continuity?

Other

142. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)

143. Are records reviewed periodically to identify problem areas?

Truck and Rail Receiving Equipment

Hydraulic Lifts

144. Are oil levels checked frequently and oil changed according to schedule?

145. Are all hoses, pipes, and couplings examined for leaks regularly?

146. Are lift areas inspected frequently to prevent buildup of trash, spilled grain, and other debris? ..

147. Are hanger bearings and cylinder bearings inspected and lubricated regularly?

148. Are pump reservoirs checked frequently and drained of water which may have accumulated? ..

YES NO

149. Are air breathers checked and thoroughly cleaned as needed?
150. Are reservoir suction filters regularly inspected and cleaned or replaced if damaged?
151. Are system operating pressures checked frequently and reset if necessary?
152. Are lift frames inspected thoroughly for cracks, excessive rust, and signs of stress and metal fatigue?
153. Are decks securely fastened to the frame?
154. Are all pivot bolts checked and securely fastened?
155. Are all cylinders checked for grooving, pitting, and scratches?
156. Are cylinder packings examined regularly for leaks?
157. Are cylinder pins and bushings checked for cracks and wear?
158. Are pit walls and floors checked for cracks and water leaks?
159. If sump pumps are used, are they checked and lubricated frequently?

Hopper Pit Gates

160. Are motor and reducer mounting bolts checked to ensure that they are securely fastened?
161. Are motors and drive assemblies checked frequently during operation for unusual noises or excessive vibration?

- | | YES | NO |
|--|--------------------------|--------------------------|
| 162. Are motors and reducers checked and lubricated according to schedule? | <input type="checkbox"/> | <input type="checkbox"/> |
| 163. Are reducer oil levels checked frequently and oil changed according to schedule? | <input type="checkbox"/> | <input type="checkbox"/> |
| 164. Are chain drive oil baths maintained at the proper levels or lubricated properly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 165. Are chains and sprockets inspected for wear and broken sprocket teeth? | <input type="checkbox"/> | <input type="checkbox"/> |
| 166. Are all drive assembly seals inspected frequently for leaks? | <input type="checkbox"/> | <input type="checkbox"/> |
| 167. Are all bearings checked and lubricated frequently? | <input type="checkbox"/> | <input type="checkbox"/> |
| 168. Do gates operate freely? | <input type="checkbox"/> | <input type="checkbox"/> |
| 169. Are rack and pinions checked for condition? | <input type="checkbox"/> | <input type="checkbox"/> |

Control Equipment

- | | | |
|---|--------------------------|--------------------------|
| 170. Are start and stop controls regularly checked to ensure that they are operating properly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 171. Are all electrical connections, couplings, and conduits checked for tightness and signs of damage? | <input type="checkbox"/> | <input type="checkbox"/> |
| 172. Are limit switches checked to ensure that they are operating properly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 173. Are starters cleaned regularly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 174. Are all bonding and grounding connections checked for electrical continuity? | <input type="checkbox"/> | <input type="checkbox"/> |

Other

YES NO

175. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
176. Are records reviewed periodically to identify problem areas?

Scales

General

177. Are controllers and printers checked and cleaned regularly?
178. Are load cells inspected and cleaned regularly?
179. Are test weights and test-weight power units inspected and cleaned regularly?
180. Are junction boxes and electrical conduits inspected regularly and checked for tightness?
181. Are air pressure gauges and settings checked periodically?
182. Are air line filters checked and cleaned regularly?
183. Are oil and hydraulic fluid levels checked regularly and changed according to schedule?
184. Are all hydraulic hoses, pipes, and couplings inspected for wear and damage?
185. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
186. Are records reviewed periodically to identify problem areas?

Platform Scales

YES NO

187. Are scale platforms checked regularly to ensure that grain, debris, and other foreign material have not accumulated between the platform and the pit walls?
188. Are sump pumps operating properly?
189. Are bumpers and check rods functioning properly?
190. Are lever systems cleaned and greased periodically?
191. Are scales checked and zeroed frequently to ensure that they are operating properly?

Bulk Scales

192. Is the operation of upper and lower garner gates checked regularly?
193. Are skirtings inspected frequently to ensure that they are not torn, ripped, or loose?
194. Are all limit switches inspected frequently?
195. Are scale bottom liners inspected periodically? ...
196. Are pneumatic cylinders checked regularly for scoring, scratches, and pitting?
197. Are all seals inspected for leaks?

Distributors and Spouts

198. Are distributors inspected daily to ensure that they are operating properly?
199. Are distributors cleaned and lubricated on schedule?

- | | YES | NO |
|---|--------------------------|--------------------------|
| 200. Are spouts checked for proper alignment? | <input type="checkbox"/> | <input type="checkbox"/> |
| 201. Are all bearings and seals inspected regularly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 202. If automatic distributors are used: | | |
| Are limit switches checked frequently and ad-
justed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are electrical connections, conduits, and connec-
tions inspected frequently for tightness and signs
of wear? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are pneumatic or hydraulic positioning systems
checked frequently to ensure that they are in good
condition and operating properly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 203. Are spouts checked frequently during operation
for holes and leaks? | <input type="checkbox"/> | <input type="checkbox"/> |
| 204. Are all spouts mounted securely? | <input type="checkbox"/> | <input type="checkbox"/> |
| 205. Are all spout connections checked for tightness? .. | <input type="checkbox"/> | <input type="checkbox"/> |
| 206. Are spout liners inspected to ensure that they are
tightly secured and in good condition? | <input type="checkbox"/> | <input type="checkbox"/> |
| 207. Are adequate records maintained? (See the first
three parts of the section, "Maintenance Pro-
gram," questions 1-14.) | <input type="checkbox"/> | <input type="checkbox"/> |
| 208. Are records reviewed periodically to identify prob-
lem areas? | <input type="checkbox"/> | <input type="checkbox"/> |

Cleaners and Scalpers

- | | | |
|--|--------------------------|--------------------------|
| 209. Are cleaners and scalpers frequently checked dur-
ing operation for unusual noises and proper
operation? | <input type="checkbox"/> | <input type="checkbox"/> |
| 210. Are motors, belts, and bearings checked fre-
quently for proper operation, excessive wear, and
alignment? | <input type="checkbox"/> | <input type="checkbox"/> |

YES NO

211. Are cleaners and scalpers and their drive assemblies inspected, cleaned, and lubricated according to schedule?
212. Are all bolts securely fastened?
213. Are screens inspected for tears and holes?
214. Are screens properly tensioned?
215. Are screen supports and braces inspected regularly for excessive wear, cracks, broken welds, or other signs of stress or fatigue?
216. Are rubber mounts and springs checked for condition?
217. Are all electrical connections, conduits, and couplings checked for tightness, condition, and signs of damage?
218. Are starters checked and cleaned regularly?
219. Are interlocks, lockouts, speed controls, and start and stop controls checked frequently to ensure that they are functioning properly?
220. Are feed and discharge spouts in good condition?
221. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
222. Are records reviewed periodically to identify problem areas?

Pneumatic Dust Control Systems

General System Operation

YES NO

223. Are all gauge readings checked frequently to ensure that the system is operating within design specifications?
224. Is the system checked regularly to ensure that it is properly balanced and that blast gates are correctly adjusted?
225. Is duct work regularly inspected to ensure that it is securely fastened and free of leaks and plugs?
226. Are all collection hoods and pickups checked to ensure that they are not clogged and that proper face velocities are maintained?

Motor and Drive Assemblies

227. Are all motor and drive assemblies checked regularly during operations for unusual noises, excessive vibration, and proper alignment?
228. Are all mounting bolts securely fastened?
229. Are all bearings inspected for shaft tightness and excessive wear and heating?
230. Are all bearings cleaned and lubricated on schedule?
231. Are speed reducer oil levels checked regularly and oil changed according to schedule?
232. Are chain drives properly lubricated?
233. Are chains and sprockets and V-belts and pulleys checked for proper alignment and tension?

234. Are sprockets and pulleys inspected for shaft tightness and for cracks, chips, and excessive wear?
235. If automatic lubrication systems are used, are all pipes, hoses, and couplings checked for tightness, leaks, and damage?

Fans

236. Are all fans regularly checked for shaft tightness, unusual noises, and vibration?
237. Are fans checked regularly for cracks, bent blades, or other damage?
238. Following maintenance procedures, are fans checked to ensure that they are rotating in the proper direction?

Filter Bags and Housings

239. Are all bags inspected regularly to ensure that they are securely fastened and properly tensioned?
240. Are bags inspected for holes, rips, and tears?
241. Are bags checked for blinding and cleaned or replaced according to schedule?.....
242. Are all inspection and access doors checked for tightness and leaks?
243. Are bag-cleaning mechanisms functioning properly?
244. If compressed air is used for bag cleaning, are these systems checked regularly:
- Compressor?
- Tank?
- Hoses, fittings, and couplings?

YES NO

245. Are filter housings inspected regularly during operations for leaks and damage and to ensure that all components are securely fastened?

Dust Disposal Systems

246. Are rotary valves checked frequently during operation to ensure that dust discharges continuously?

247. Are rotary valve wiper blades checked frequently and replaced according to schedule?

248. Are all spouts, duct work, and dust storage bins checked for plugs or bridging?

Control and Safety Equipment

249. Are interlocks, lockouts, and start and stop controls checked regularly to ensure that they are operating properly?

250. Are all alarms and gauges inspected regularly to ensure that they are functioning properly?

251. Are explosion relief vents and panels checked to ensure that they will function as intended?

252. Are sprinklers or flame-suppression devices inspected regularly?

253. Are all electrical connections, conduits, and couplings checked frequently?

254. Are bonding and grounding connections checked for electrical continuity?

Other

255. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)

YES NO

256. Are records reviewed periodically to identify problem areas?

Manlifts

257. Are splices on manlift belts checked regularly for condition?
258. Are belt steps and handholds checked regularly for tightness?
259. Are belts checked periodically for tension and alignment and to ensure that belt speed while operating does not exceed 30 feet per minute?
260. Are all bearings inspected regularly for heating, excessive wear, vibration, and tightness on shafts?
261. Are all bearings lubricated according to schedule?
262. Are motors and reducers observed periodically during operation for alignment and vibration or unusual noises?
263. Are reducer oil levels checked and oil changed according to schedule?
264. Are motors and tensioning devices inspected and lubricated regularly?
265. Are upper and lower pulleys regularly inspected for cracks and other signs of excessive wear and damage?
266. Are all structural members and braces securely fastened and inspected regularly for cracked welds and other signs of damage?
267. Are manlift brakes tested regularly to ensure that they will hold lift in position with 250 pounds on each step?

YES NO

268. Are limit switches inspected and set properly?
269. Are manlift backstops inspected regularly to ensure that they are functioning properly?
270. Are all guards, handrails, and toeboards checked regularly to ensure that they are in place and securely fastened?
271. Are start and stop controls inspected regularly to ensure that they are functioning properly?
272. Are all electrical connections, contacts, and conduits inspected periodically to ensure that they are in good condition?
273. Are bonding and grounding connections regularly checked for electrical continuity?
274. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
275. Are records reviewed periodically to identify problem areas?

Passenger Elevators

276. Are cables and sheaves inspected frequently for signs of wear or damage?
277. Are electric motors checked regularly during operation for vibration and unusual noises?
278. Are speed reducers inspected frequently for alignment and wear?
279. Are reducers and motors lubricated according to schedule?
280. Are doors inspected and lubricated regularly to ensure that they are closing properly?

YES NO

281. Are all structural members and braces securely fastened and inspected regularly for cracked welds and other signs of damage?
282. Are all limit switches checked regularly to ensure that they are operating properly?
283. Are all electrical relays inspected and cleaned or repaired regularly?
284. Are all interlocks and start and stop controls inspected regularly to ensure that they are operating properly?
285. Are all electrical connections, contacts, and conduits inspected regularly for condition and signs of damage?
286. Are bonding and grounding connections checked regularly for electrical continuity?
287. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)
288. Are records reviewed periodically to identify problem areas?

Safety Equipment

289. Is all personal protective equipment inspected regularly and maintained according to manufacturer's specifications?
290. Are hand-held fire extinguishers checked and recharged according to schedule?
291. Are maintenance instructions and schedules followed for:
Sprinklers?

	YES	NO
Standpipes?	<input type="checkbox"/>	<input type="checkbox"/>
Fixed CO ₂ extinguishing systems?	<input type="checkbox"/>	<input type="checkbox"/>
Fixed dry chemical extinguishing systems?	<input type="checkbox"/>	<input type="checkbox"/>
Flame and smoke detection systems?	<input type="checkbox"/>	<input type="checkbox"/>
Flame suppression systems?	<input type="checkbox"/>	<input type="checkbox"/>
292. Are bin temperature sensors and controls checked regularly to ensure that they are securely fastened and operating properly?	<input type="checkbox"/>	<input type="checkbox"/>
293. Are bin level indicators and controls inspected regularly to ensure that they are securely fastened and operating properly?	<input type="checkbox"/>	<input type="checkbox"/>
294. Are alarms tested frequently?	<input type="checkbox"/>	<input type="checkbox"/>
295. Are ladders, stairs, and fire doors inspected frequently?	<input type="checkbox"/>	<input type="checkbox"/>
296. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)	<input type="checkbox"/>	<input type="checkbox"/>
297. Are records reviewed periodically to identify problem areas?	<input type="checkbox"/>	<input type="checkbox"/>

Miscellaneous

298. Are there maintenance instructions and schedules for the following:

Trippers?

<input type="checkbox"/>	<input type="checkbox"/>
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Drag or en masse conveyors?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Vehicles including bobcats, front-end loaders, lift trucks, switch engines, and so forth?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Duct work and spouting?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Electrical system as a whole?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

	YES	NO
Control-room equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Water storage and supply systems?	<input type="checkbox"/>	<input type="checkbox"/>
Fuel and chemical storage and supply systems?	<input type="checkbox"/>	<input type="checkbox"/>
Gantries, cranes, and other dock equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Grain inspection and sampling equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Winches, hoists, and pumps?	<input type="checkbox"/>	<input type="checkbox"/>
Grinders?	<input type="checkbox"/>	<input type="checkbox"/>
Pellet mills?	<input type="checkbox"/>	<input type="checkbox"/>
Tramp metal screens and magnets?	<input type="checkbox"/>	<input type="checkbox"/>
Hand tools?	<input type="checkbox"/>	<input type="checkbox"/>
299. Are adequate records maintained? (See the first three parts of the section, "Maintenance Program," questions 1-14.)	<input type="checkbox"/>	<input type="checkbox"/>
300. Are records reviewed periodically to identify problem areas?	<input type="checkbox"/>	<input type="checkbox"/>

NOTES

PLANT SECURITY PROGRAM

Plant security is a vital part of protecting the substantial investment represented by a grain-handling facility. It can be extremely important in preventing losses due to theft, vandalism, and terrorist activity. Limiting access to the premises to authorized personnel helps to ensure that unforeseen accidents and mistakes will be limited.

1. Has the facility developed and implemented a written security program?
2. Does the program specify plant security responsibilities for:
Designated management official(s)?
Individual employees and shifts?
Major areas within the facility?
3. Does the program require physical security measures such as:
Fences?
Flood lights?
Alarms?
Closed circuit television?
Other (specify) _____
4. Are these measures supplemented with:
Stationary guards?
Guard patrols?
5. Are guards on duty during plant operations?
6. Are guards on duty while the facility is not operating?
7. What is the extent of guard patrols:
Perimeter?
Facility?

	YES	NO
Rail yards?	<input type="checkbox"/>	<input type="checkbox"/>
Truck-receiving and parking areas?	<input type="checkbox"/>	<input type="checkbox"/>
Dock areas?	<input type="checkbox"/>	<input type="checkbox"/>
Other areas in complex?	<input type="checkbox"/>	<input type="checkbox"/>
8. Does the program control access to the facility (ID's, visitor passes, records of arrivals and departures)?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are the following required to furnish ID's for access to the facility:		
Employees?	<input type="checkbox"/>	<input type="checkbox"/>
Contractors?	<input type="checkbox"/>	<input type="checkbox"/>
Deliverymen?	<input type="checkbox"/>	<input type="checkbox"/>
Visitors?	<input type="checkbox"/>	<input type="checkbox"/>
10. Are all contractors, deliverymen, and other outside persons escorted by elevator officials while on the premises?	<input type="checkbox"/>	<input type="checkbox"/>
11. Does the plant security force coordinate their activities with local law enforcement authorities?	<input type="checkbox"/>	<input type="checkbox"/>
12. Are persons prohibited from carrying unauthorized hazardous materials onto the premises?	<input type="checkbox"/>	<input type="checkbox"/>
13. If an unauthorized person is discovered on the premises, does the program require a search of the facility for possible theft, damage, or sabotage?	<input type="checkbox"/>	<input type="checkbox"/>
14. Is vehicle access into the premises restricted?	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all vehicles entering the premises inspected for hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>

YES NO

16. Are vehicles carrying hazardous substances on the premises accompanied by authorized facility employees?

17. Are security personnel and other physical measures evaluated on a regular basis?

NOTES

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